

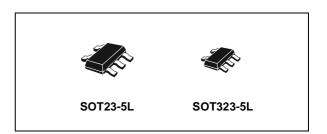
74V1G384

SINGLE HIGH SPEED BUS SWITCH

- HIGH SPEED: $t_{PD} = 0.5 \text{ns}$ (TYP.) at $V_{CC} = 5 \text{V}$
- LOW POWER DISSIPATION: $I_{CC} = 1\mu A(MAX.)$ at $T_A=25^{\circ}C$
- LOW "ON" RESISTANCE at V_{CC} =5.0V: R_{ON} = 7Ω (TYP), V_{IN} =0V, $I_{I/O}$ =30mA R_{ON} = 14Ω (TYP), V_{IN} =2.4V, $I_{I/O}$ =15mA
- OPERATING VOLATGE RANGE:
 V_{CC} (OPR.) = 3.0V TO 5.5V
- 5V TOLERANT ON CONTROL PIN
- HIGH NOISE IMMUNITY: V_{NIH} = V_{NIL} = 28% V_{CC} (MIN.)

DESCRIPTION

The 74V1G384 is an advanced high-speed CMOS SINGLE HIGH SPEED BUS SWITCH fabricated in silicon gate C²MOS technology. It's designed to operate from 3V to 5.5V, making this device ideal for portable applications. It's offers 7Ω Resistance typical value at $V_{CC}{=}5V$. Additional key feature are fast switching speed ($t_{ON}{=}3.8ns,\ t_{OFF}{=}3.3ns$ Typical) and Low Power Consumption.



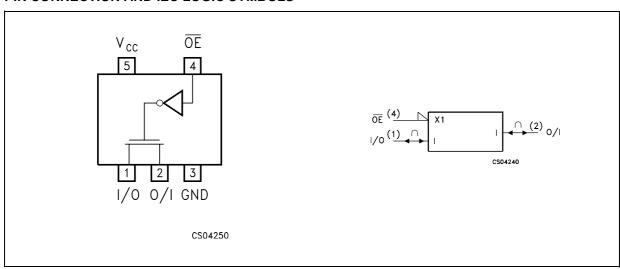
ORDER CODES

PACKAGE	T&R
SOT23-5L	74V1G384STR
SOT323-5L	74V1G384CTR

The \overline{OE} input is provided to control the switch; the switch is \overline{ON} when the \overline{OE} input is held low and \overline{OFF} when \overline{OE} is held high.

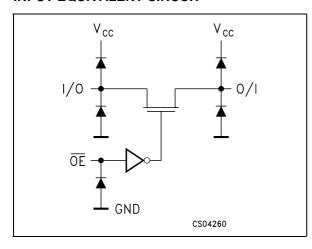
It's available in the commercial and extended temperature range in SOT23-5L and SC-70-5L package.

PIN CONNECTION AND IEC LOGIC SYMBOLS



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INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

PIN N°	SYMBOL	NAME AND FUNCTION
1	I/O	Independent Input/Output
2	O/I	Independent Output/Input
4	ŌĒ	Enable Input (Active HIGH)
3	GND	Ground (0V)
5	V _{CC}	Positive Supply Voltage

TRUTH TABLE

OE	SWITCH FUNCTION
L	ON
Н	OFF *

^{*} High Impedance State

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	-0.5 to +7.0	V
VI	DC Input Voltage	-0.5 to V _{CC} + 0.5	V
V _{IC}	DC Control Input Voltage	-0.5 to +7.0	V
Vo	DC Output Voltage	-0.5 to V _{CC} + 0.5	V
I _{IK}	DC Input Diode Current	± 20	mA
I _{IK}	DC Control Input Diode Current	- 20	mA
I _{OK}	DC Output Diode Current	± 20	mA
Io	DC Output Current	± 50	mA
I _{CC} or I _{GND}	DC V _{CC} or Ground Current	± 50	mA
T _{stg}	Storage Temperature	-65 to +150	°C
TL	Lead Temperature (10 sec)	300	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	3 to 5.5	V
V _I	Input Voltage	0 to V _{CC}	V
V _{IC}	Control Input Voltage	0 to 5.5	V
Vo	Output Voltage	0 to V _{CC}	V
T _{op}	Operating Temperature	-55 to 125	°C
dt/dv	Input Rise and Fall Time (note 1) V _{CC} = 5.0V	0 to 20	ns/V

¹⁾ V_{IN} from 30% to 70% of V_{CC} on control pin

DC SPECIFICATIONS

		Т	est Condition	Value							
Symbol	Parameter	V _{CC}		T _A = 25°C			-40 to 85°C		-55 to 125°C		Unit
		(V)		Min.	Тур.	Max.	Min.	Max.	Min.	Max.	
V _{IH}	High Level Input	2.0		1.5			1.5		1.5		
	Voltage	3.0 to 5.5		0.7V _{CC}			0.7V _{CC}		0.7V _{CC}		V
V _{IL}	Low Level Input	2.0				0.5		0.5		0.5	
	Voltage	3.0 to 5.5				0.3V _{CC}		0.3V _{CC}		0.3V _{CC}	V
R _{ON}	ON Resistance	3.0	$V_{IC} = V_{IL}$ $V_{I/O} = GND$ $I_{I/O} \le 30 \text{ mA}$		9			13		20	Ω
		4.5	$V_{IC} = V_{IL}$ $V_{I/O} = GND$ $I_{I/O} \le 30 \text{ mA}$		7			10		15	Ω
R _{ON}	ON Resistance	3.0	$V_{IC} = V_{IL}$ $V_{I/O} = 1.5V$ $I_{I/O} \le 15 \text{ mA}$		20			40		60	Ω
		4.5	$V_{IC} = V_{IL}$ $V_{I/O} = 2.4V$ $I_{I/O} \le 15 \text{ mA}$		14			28		40	Ω
l _{OFF}	Input/Output Leakage Current (SWITCH OFF)	5.5	$V_{OS} = V_{CC}$ to GND $V_{IS} = V_{CC}$ to GND $V_{IC} = V_{IL}$			±0.1		± 1		± 10	μΑ
I _{IN}	Control Input Leakage Current	0 to 5.5	V _{IC} = 5.5V or GND			± 0.1		± 1.0		± 1.0	μА
I _{CC}	Quiescent Supply Current	5.5	$V_I = V_{CC}$ or GND			1		10		20	μА

AC ELECTRICAL CHARACTERISTICS ($C_L = 50 pF$, Input $t_r = t_f = 3 ns$)

		Test Condition		Value							
Symbol	Parameter	V _{CC}		T _A = 25°C			-40 to	85°C	-55 to 125°C		Unit
		(V)		Min.	Тур.	Max.	Min.	Max.	Min.	Max.	
t _{PD}	Delay Time	3.3(*)	$t_r = t_f = 6ns$		0.8	1.2		1.5		2.0	no
		5.0 ^(**)	$t_r = t_f = 6ns$		0.5	0.8		1.0		1.5	ns
t _{PLZ} t _{PHZ}	Output Disable Time	3.3 ^(*)	$R_1 = 500\Omega$ $V_{IN} = 1.5V$		8.5	12.0		14.0		16.0	ns
		5.0 ^(**)	$R_1 = 500\Omega$ $V_{IN} = 2.4V$		3.8	6.5		9.0		10.0	
t _{PZL}	Output Enable	3.3 ^(*)	$R_1 = 1K\Omega$ $V_{IN}=1.5V$		7.3	12.0		14.0		16.0	ne
t _{PZH}	Time	5.0 ^(**)	$R_1 = 1K\Omega$ $V_{IN}=2.4V$		3.3	5.0		7.5		8.5	ns

^(*) Voltage range is $3.3V \pm 0.3V$ (**) Voltage range is $5.0V \pm 0.5V$

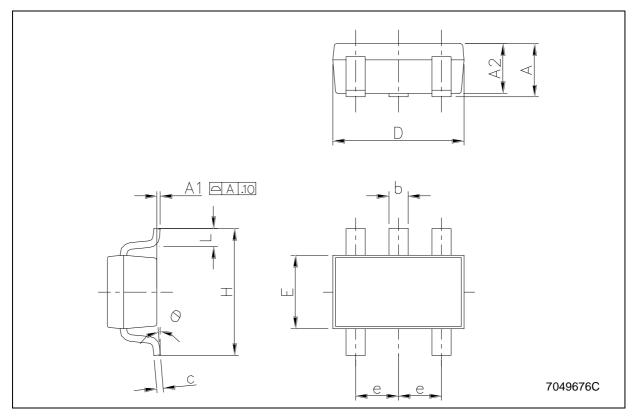
CAPACITIVE CHARACTERISTICS

		Т	Test Condition		Value						
Symbol Parameter	Parameter	V _{CC}	T _A = 25°C			-40 to 85°C		-55 to 125°C		Unit	
	(V)	Min.	Тур.	Max.	Min.	Max.	Min.	Max.			
C _{IN}	Input Capacitance				4	10		10		10	pF
C _{I/O}	Output Capacitance				7						pF
C _{PD}	Power Dissipation	3.3			2.5						
	Capacitance (note 1)	5.0			3						pF

¹⁾ C_{PD} is defined as the value of the IC's internal equivalent capacitance which is calculated from the operating current consumption without load. (Refer to Test Circuit). Average operating current can be obtained by the following equation. I_{CC(opr)} = C_{PD} x V_{CC} x f_{IN} + I_{CC}

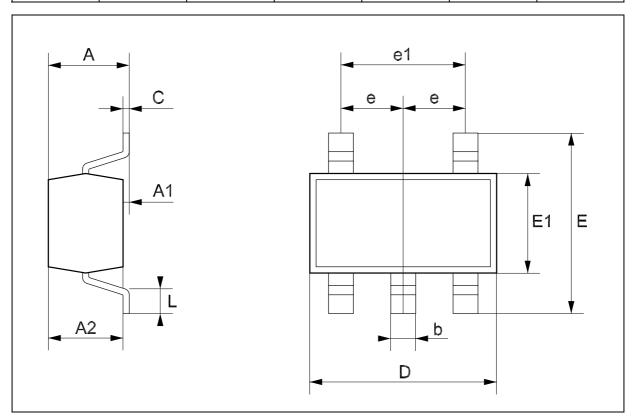
SOT23-5L MECHANICAL DATA

DIM.		mm.			mils	nils		
DIWI.	MIN.	TYP	MAX.	MIN.	TYP.	MAX.		
А	0.90		1.45	35.4		57.1		
A1	0.00		0.10	0.0		3.9		
A2	0.90		1.30	35.4		51.2		
b	0.35		0.50	13.7		19.7		
С	0.09		0.20	3.5		7.8		
D	2.80		3.00	110.2		118.1		
Е	1.50		1.75	59.0		68.8		
е		0.95			37.4			
Н	2.60		3.00	102.3		118.1		
L	0.10		0.60	3.9		23.6		

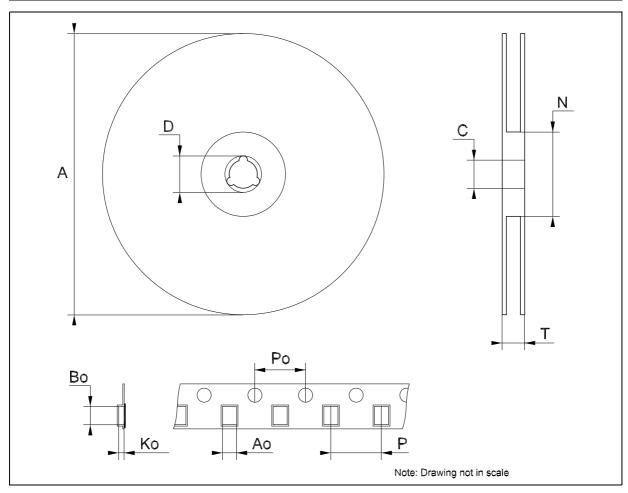


SOT323-5L MECHANICAL DATA

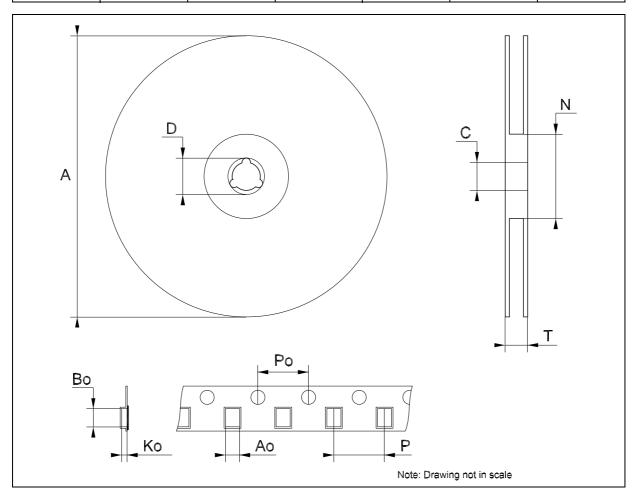
DIM		mm.				
DIM.	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
А	0.80		1.10	31.5		43.3
A1	0.00		0.10	0.0		3.9
A2	0.80		1.00	31.5		39.4
b	0.15		0.30	5.9		11.8
С	0.10		0.18	3.9		7.1
D	1.80		2.20	70.9		86.6
E	1.80		2.40	70.9		94.5
E1	1.15		1.35	45.3		53.1
е		0 .65			25.6	
e1		1.3			51.2	
L	0.10		0.30	3.9		11.8



DIM.		mm.				
Dilvi.	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
А			180			7.086
С	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
Т			14.4			0.567
Ao	3.13	3.23	3.33	0.123	0.127	0.131
Во	3.07	3.17	3.27	0.120	0.124	0.128
Ko	1.27	1.37	1.47	0.050	0.054	0.0.58
Po	3.9	4.0	4.1	0.153	0.157	0.161
Р	3.9	4.0	4.1	0.153	0.157	0.161



DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
А	175	180	185	6.889	7.086	7.283
С	12.8	13	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	59.5	60	60.5		2.362	
Т			14.4			0.567
Ao		2.25			0.088	
Во		2.7			0.106	
Ko		1.2			0.047	
Po	3.9	4	4.1	0.153	0.157	0.161
Р	3.8	4	4.2	0.149	0.157	0.165



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